

冻融循环对甲壳素凝聚态结构和脱乙酰反应的影响 Effects of Freezing-thawing Cyclic Treatment on Condensed State Structure and N-deacetylation of Chitin

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关键词: 甲壳素 冻融循环处理 N-脱乙酰反应 晶体结构 氢键

摘要: 甲壳素和质量分数为40%的浓NaOH溶液的混合物在-18℃和40℃条件下反复进行冻融处理, 结果表明慢速冷冻加低温解冻的冻融循环处理过程中, 冰晶的反复形成和重结晶能够破坏甲壳素凝聚态特别是晶态结构。经过3次冻融循环处理, 可使甲壳素在NaOH溶液中完全溶解, 获得甲壳素最终质量分数为4%, NaOH最终质量分数约为10%的均相溶液, 为用均相脱乙酰法制备半脱乙酰水溶性甲壳素提供前提。 The effects of freezing-thawing cyclic (FTC) treatment on the condensed state structure and N-deacetylation of chitin were investigated. The mixture of chitin and concentrated NaOH solutions (40%) was frozen at -18℃ and thawed at 40℃, repeatedly. Slowly freezing and low temperature thawing cycle process can thoroughly destruct the condensed state structure, especially the crystalline state structure, as a result of the ice crystals' repeatedly formed and recrystallized. Furthermore, via three times FTC treatment at -18℃, chitin was completely dissolved in NaOH aqueous solution and the homogeneous solution with a chitin concentration about 4% and a final NaOH concentration of approximately 10% formed, which is likely applied to prepare partial N-deacetylated water-soluble-chitin.

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